

Offshoring to high and low income countries and the labour demand. Evidence from Italian firms.

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Politiche dell'Unione Europea,
processi di integrazione economica
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The issue

Declining labour share in advanced economies (IMF, 2007):

- Are there any tensions between deepening international integration and the preservation of employment levels in advanced countries?
- What is the role of offshoring to low income countries?

The evidence

- Sector level:
 - Falzoni and Tajoli (2009);
 - Bertoli (2008);
- Firm level:
 - Costa and Ferri (2008).

Our contribution

- Firm-level evidence;
- Offshoring measures split by origin of imports;
- Heterogeneous effects across sectors.

The data

- Istat Annual Report 2006 - panel of firms 2000-2004
- Offshoring measures (Horgos, 2009):
 - total material imports on total purchases;
 - total material imports on the firm total sales.

Sample Composition and Offshoring Practices

| NACE | Number of: | | | | Offshorers to (%): | | | | | |
|-------|------------|-------|------------|-------|----------------------|-------|-----------------------|-------|-------------------------------|-------|
| | Firms | | Offshorers | | Low Income Countries | | High Income Countries | | Low and High Income Countries | |
| | 2000 | 2004 | 2000 | 2004 | 2000 | 2004 | 2000 | 2004 | 2000 | 2004 |
| 15 | 2595 | 2596 | 831 | 870 | 39.95 | 48.51 | 88.93 | 88.28 | 28.88 | 36.78 |
| 17 | 2545 | 2583 | 1353 | 1355 | 69.55 | 78.15 | 81.15 | 76.97 | 50.70 | 55.13 |
| 18 | 1699 | 1629 | 727 | 791 | 78.95 | 87.61 | 70.56 | 61.19 | 49.52 | 48.80 |
| 19 | 1666 | 1688 | 810 | 833 | 83.83 | 87.88 | 61.11 | 56.42 | 44.94 | 44.30 |
| 20 | 1291 | 1247 | 586 | 592 | 69.11 | 68.75 | 76.79 | 76.35 | 45.90 | 45.10 |
| 21 | 845 | 861 | 354 | 360 | 53.11 | 60.28 | 93.22 | 90.83 | 46.33 | 51.11 |
| 22 | 2226 | 2211 | 366 | 361 | 23.77 | 33.24 | 93.44 | 91.41 | 17.21 | 24.65 |
| 24 | 1366 | 1371 | 902 | 908 | 53.66 | 62.78 | 93.79 | 92.51 | 47.45 | 55.29 |
| 25 | 2404 | 2383 | 1064 | 1088 | 46.15 | 54.78 | 87.97 | 85.39 | 34.12 | 40.17 |
| 26 | 2334 | 2324 | 524 | 573 | 59.35 | 63.18 | 78.24 | 77.49 | 37.60 | 40.66 |
| 27 | 940 | 907 | 431 | 450 | 58.93 | 69.33 | 85.15 | 83.56 | 44.08 | 52.89 |
| 28 | 7351 | 7531 | 1517 | 1627 | 44.17 | 53.10 | 83.92 | 81.68 | 28.08 | 34.79 |
| 29 | 5967 | 5822 | 2689 | 2778 | 54.93 | 64.00 | 85.98 | 82.54 | 40.91 | 46.54 |
| 30 | 151 | 144 | 67 | 72 | 56.72 | 56.94 | 100.00 | 93.06 | 56.72 | 50.00 |
| 31 | 1854 | 1854 | 714 | 798 | 56.02 | 66.04 | 86.83 | 83.58 | 42.86 | 49.62 |
| 32 | 494 | 515 | 251 | 287 | 54.18 | 70.03 | 94.02 | 88.85 | 48.21 | 58.89 |
| 33 | 1092 | 1096 | 601 | 630 | 48.92 | 60.00 | 95.01 | 89.52 | 43.93 | 49.52 |
| 34 | 471 | 471 | 243 | 258 | 53.50 | 68.99 | 88.07 | 87.98 | 41.56 | 56.98 |
| 35 | 416 | 405 | 160 | 164 | 50.63 | 62.80 | 87.50 | 87.20 | 38.13 | 50.00 |
| 36 | 2772 | 2841 | 1024 | 1100 | 54.59 | 63.36 | 83.01 | 77.00 | 37.60 | 40.36 |
| Total | 40479 | 40479 | 15214 | 15895 | 55.50 | 63.99 | 85.74 | 82.59 | 41.240 | 46.58 |

Source: Our elaborations on the Firm-level database from ISTAT Annual Report, 2006*

Average share of offshoring

| Sectors | <i>OFF</i> | <i>OFF_{Low}</i> | <i>OFF_{High}</i> |
|-------------------------------|------------|--------------------------|---------------------------|
| Across All Firms | | | |
| All | 0.07 | 0.02 | 0.05 |
| Traditional | 0.09 | 0.04 | 0.05 |
| Non-Traditional | 0.06 | 0.01 | 0.05 |
| Across Offshorers only | | | |
| All | 0.191 | 0.104 | 0.158 |
| Traditional | 0.217 | 0.144 | 0.159 |
| Non-Traditional | 0.170 | 0.067 | 0.156 |

Sectoral Offshoring and Employment Evolution

| NACE | Sectoral Indicators | | | Sectoral Offshoring from Firm-Level Data | | | |
|-----------------|---------------------------|---------------------|---------------------|--|---------------------|---------------|---------------------|
| | Offshoring from IO Tables | | Employment | to High Income | | to Low Income | |
| | 2000 | $\Delta\%2000/2004$ | $\Delta\%2000/2004$ | 2004 | $\Delta\%2000/2004$ | 2004 | $\Delta\%2000/2004$ |
| 15 ^a | 0.096 | 1 | 5.6 | 0.14 | 0.72 | 0.028 | 47.37 |
| 17 | 0.227 | 2.6 | -15.9 | 0.152 | -5 | 0.134 | 41.05 |
| 18 | 0.186 | 1.7 | -11 | 0.085 | -5.56 | 0.364 | 36.33 |
| 19 | 0.214 | -0.3 | -12.6 | 0.065 | 3.17 | 0.275 | 26.15 |
| 20 | 0.153 | 0.7 | 0.1 | 0.194 | -3.96 | 0.134 | 7.2 |
| 21 | 0.302 | -4.2 | -0.5 | 0.254 | -2.31 | 0.064 | -4.48 |
| 22 | 0.159 | -1.3 | -5.8 | 0.192 | 7.87 | 0.008 | 100 |
| 24 | 0.437 | 3.3 | -3.1 | 0.534 | 7.23 | 0.035 | -2.78 |
| 25 | 0.318 | -1.6 | -1.3 | 0.2 | -21.26 | 0.04 | 33.33 |
| 26 | 0.113 | -1.6 | 2.3 | 0.063 | 6.78 | 0.024 | 71.43 |
| 27 | 0.336 | 4.4 | -2.8 | 0.187 | -5.08 | 0.168 | 11.26 |
| 28 | 0.182 | 2.8 | 3.5 | 0.108 | -5.26 | 0.042 | 50 |
| 29 | 0.158 | 0.2 | -1.8 | 0.111 | -3.48 | 0.037 | 60.87 |
| 30 | 0.651 | -12.6 | -11 | 0.364 | 58.26 | 0.04 | 42.86 |
| 31 | 0.234 | -3.8 | -12.6 | 0.158 | -4.82 | 0.063 | 80 |
| 32 | 0.527 | -6.9 | -13.1 | 0.388 | -25.1 | 0.056 | 27.27 |
| 33 | 0.339 | 2.5 | -0.3 | 0.225 | -2.6 | 0.068 | 78.95 |
| 34 | 0.28 | -3.1 | -6.2 | 0.201 | -15.9 | 0.037 | 54.17 |
| 35 | 0.299 | -2 | 4.6 | 0.294 | 23.01 | 0.047 | -37.33 |
| 36 | 0.217 | 0 | 3.7 | 0.056 | -15.15 | 0.039 | 34.48 |

Source: National IO Tables, National Accounts and Firm Economic Accounts (Istat). The growth rates concern the 5-year period 2000/2004. ^a This is the sum of NACE 15 and 16 (sub-section DA), because in the Firm Economic Accounts (Istat) NACE sector 15 is missing.

The model

$$l_{ijt} = \alpha_0 + \beta_0 l_{ijt-1} + \alpha_1 w_{ijt} + \gamma_1 w_{ijt-1} + \alpha_2 k_{ijt} + \gamma_2 k_{ijt-1} + \alpha_3 y_{ijt} + \gamma_3 y_{ijt-1} + \delta OFF_{ijt} + \eta_i + \mu_j + \tau_t + \epsilon_{ijt} \quad (1)$$

System GMM: lags t-3, t-4;

AR1, AR2, Hansen: OK;

Results

| | Offshoring over total sales | | | | | |
|-------------------|-----------------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|
| | (7) | (8) | (9) | (10) | (11) | (12) |
| l_{t-1} | .727*** (0.0402) | 0.725*** (0.0410) | 0.716*** (0.0456) | 0.728*** (0.0370) | 0.725*** (0.0379) | 0.723*** (0.0404) |
| k_t | -0.0516 (0.0399) | -0.0511 (0.0405) | -0.041 (0.0452) | -0.0476 (0.0359) | -0.0479 (0.0370) | -0.04 (0.0415) |
| k_{t-1} | 0.0566 (0.0360) | 0.0566 (0.0366) | 0.0482 (0.0405) | 0.0528 (0.0323) | 0.0528 (0.0333) | 0.0476 (0.0365) |
| y_t | 0.743*** (0.107) | 0.747*** (0.109) | 0.743*** (0.116) | 0.732*** (0.0944) | 0.735*** (0.0977) | 0.743*** (0.106) |
| y_{t-1} | -0.496*** (0.0999) | -0.500*** (0.101) | -0.493*** (0.108) | -0.491*** (0.0891) | -0.491*** (0.0921) | -0.502*** (0.102) |
| w_t | -0.649*** (0.222) | -0.650*** (0.225) | -0.560** (0.253) | -0.622*** (0.200) | -0.599*** (0.207) | -0.601*** (0.226) |
| w_{t-1} | 0.413** (0.162) | 0.416** (0.163) | 0.352** (0.178) | 0.396*** (0.147) | 0.377** (0.151) | 0.393** (0.171) |
| OFF_t | 0.0153 (0.117) | | -0.898 (0.891) | | | |
| OFF_{t-1} | | 0.0229 (0.0973) | 0.749 (0.734) | | | |
| $OFF_{Low\ t}$ | | | | -0.237*** (0.0889) | | -1.232 (2.103) |
| $OFF_{Low\ t-1}$ | | | | | -0.204*** (0.0782) | 0.892 (1.872) |
| $OFF_{High\ t}$ | | | | 0.515 (0.318) | | 0.265 (1.271) |
| $OFF_{High\ t-1}$ | | | | | 0.361* (0.195) | 0.168 (0.811) |

Firm-level controls

| | Offshoring over total sales | | | | | |
|--------------------|-----------------------------|----------------------|----------------------|-----------------------|-----------------------|------------------------|
| | (7) | (8) | (9) | (10) | (11) | (12) |
| I_{t-1} | 0.749*** (0.0304) | 0.748*** (0.0309) | 0.744*** (0.0370) | 0.737*** (0.0371) | 0.727*** (0.0386) | 0.753*** (0.0390) |
| | | | | | | |
| $OFF_{Low\ t}$ | -0.244** (0.105) | | -0.0388 (1.794) | -0.255*** (0.0864) | | -0.521 (0.856) |
| $OFF_{Low\ t-1}$ | | -0.191** (0.0927) | -0.144 (1.579) | | -0.247*** (0.0813) | 0.239 (0.750) |
| $OFF_{High\ t}$ | 0.354 (0.306) | | -1.562 (2.190) | 0.387 (0.265) | | 0.122 (0.854) |
| $OFF_{High\ t-1}$ | | 0.286 (0.185) | 1.261 (1.413) | | 0.303* (0.183) | 0.104 (0.586) |
| Exp_t | -0.0965 (0.0597) | | 0.129 (0.342) | | | |
| Exp_{t-1} | | -0.0752 (0.0595) | -0.17 (0.308) | | | |
| $Imm.Assets_t$ | | | | -0.00115 (0.00485) | | 0.0216** (0.0109) |
| $Imm.Assets_{t-1}$ | | | | | -0.00336 (0.00505) | -0.0186** (0.00800) |

By Pavitt sector

| | Traditional Sectors | | | | | |
|--------------------|-----------------------------|-----------------------|----------------------|----------------------|-----------------------|----------------------|
| | Offshoring over total sales | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| I_{t-1} | 0.761*** (0.0355) | 0.765*** (0.0368) | 0.686*** (0.0430) | 0.778*** (0.0505) | 0.752*** (0.0457) | 0.713*** (0.0469) |
| | | | | | | |
| $OFF_{Low\ t}$ | -0.388*** (0.114) | | -1.345* (0.807) | -0.381*** (0.122) | | -1.599** (0.756) |
| $OFF_{Low\ t-1}$ | | -0.333*** (0.0995) | 0.479 (0.565) | | -0.410*** (0.103) | 0.72 (0.610) |
| $OFF_{High\ t}$ | 0.133 (0.172) | | 1.336 (0.968) | 0.256 (0.260) | | -0.328 (0.836) |
| $OFF_{High\ t-1}$ | | 0.125 (0.124) | -0.736 (0.630) | | 0.195 (0.152) | 0.191 (0.542) |
| Exp_t | -0.0251 (0.0610) | | 0.568 (0.738) | | | |
| Exp_{t-1} | | -0.0261 (0.0529) | -0.376 (0.515) | | | |
| $Imm.Assets_t$ | | | | -0.0142 (0.0103) | | -0.0341* (0.0195) |
| $Imm.Assets_{t-1}$ | | | | | -0.00741 (0.00807) | 0.0201 (0.0157) |

Extensions: unconditional labour demand

Conclusions and policy implications

- negative effect of offshoring to low income countries on the conditional labour demand of Italian manufacturing firms (in Traditional sectors);
- reconciling ambiguous sector level evidence: importance of firm-level studies;
- policy makers should aim at easing the transition of production towards more advanced manufacturing and service sectors.

Thank you!